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SOUTH'S NATIONAL BANK STRENGTH.

COINCIDENTLY with the return from its tour of hearings of the Reserve Bank Organization Committee, charged with the selection of the Federal reserve cities under the new currency law, there became available the figures showing the condition of the National banks of the country at the close of business on January 14, 1914. They reveal in a striking way the substantial soundness of our financial instrumentalities in their \$2,049,783,152 of capital, surplus and undivided profits; \$11,296,355,139 of aggregate resources and \$6,072,064,753 of individual deposits. The share of the South in this exhibit appears by States in the following table:

States.	Capital, surplus and undivided profits.	Aggregate resources.	Individual deposits.
Alabama	\$17,708,730	\$78,429,570	\$44,766,049
Arkansas	8,621,309	39,613,024	20,513,555
District Columbia	12,657,927	61,320,112	29,084,074
Florida	11,102,725	61,029,857	34,896,353
Georgia	27,652,915	108,292,881	53,633,989
Kentucky	27,980,989	134,931,822	67,133,323
Louisiana	12,922,853	72,676,515	35,069,798
Maryland	31,302,062	172,600,819	85,923,312
Mississippi	5,807,964	28,769,597	16,519,769
Missouri	57,316,956	387,865,297	141,559,774
North Carolina	13,372,318	69,750,298	37,182,145
Oklahoma	19,860,897	120,125,619	76,306,741
South Carolina	10,037,201	46,890,549	23,715,428
Tennessee	21,551,643	119,685,366	66,952,028
Texas	86,706,981	384,665,968	203,855,896
Virginia	32,968,289	164,841,617	93,011,395
West Virginia	18,021,164	91,167,319	59,105,622
Total	\$415,592,033	\$2,142,656,730	\$1,089,229,251
United States	\$2,049,783,152	\$11,296,355,139	\$6,072,064,753

With about one-third of the total population of the country, and with its background of 20 years of stress and strain causing it to be slow to accumulate any kind of capital and slower to turn its capital into National banking, the South has in its National banks \$415,592,033, or 20.2 per cent. of the total capital, surplus and undivided profits of all the National banks of the country; \$2,142,656,730, or 23.4 per cent. of the total aggregate resources, and \$1,089,229,251, or 17.9 per cent. of the total individual deposits. The advance made by the South in this particular corresponding to its material advance on other lines is indicated in the fact that in 1880, about the time when the South began to recover from its great disaster, its National banks had only 11.6 per cent. of the capital, 9.6 of the aggregate resources and 8.4 per cent. of the individual deposits of such institutions in the United States.

In the intervening 34 years there have been notable increases in capital from \$53,888,930 to \$247,130,325, or by \$193,241,395, equal to 358.6 per cent., in the South, and from \$412,476,155 to \$805,135,257, or by \$392,659,102, equal to 95.2 per cent., in the rest of the country; in aggregate resources from

\$194,084,459 to \$2,142,656,730, or by \$1,948,572,271, equal to 1003.9 per cent., in the South, and from \$1,911,702,167 to \$9,153,698,409, or by \$7,241,996,242, equal to 378.8 per cent., in the rest of the country, and in individual deposits from \$73,124,523 to \$1,089,229,251, or by \$1,016,104,728, equal to 1389.6 per cent., in the South, and from \$800,413,114 to \$4,982,835,502, or by \$4,182,422,388, equal to 522.5 per cent., in the rest of the country.

The greater part of the increase in the South has come since 1900, and it has been much greater relatively than the increase in the rest of the country. Between 1900 and 1914 the increase has been at a rate greater than 130 per cent. in capital, greater than 230 per cent. in aggregate resources and greater than 210 per cent. in individual deposits for the National banks in the South, while for those in the rest of the country the increase has been less than 67 per cent. in capital, less than 123 per cent. in aggregate resources and less than 143 per cent. in individual deposits. The aggregate resources of National banks in the South are now greater by \$36,870,104 than the aggregate resources of all the National banks of the country in 1880, and the deposits in National banks in the South are greater by \$215,691,614 than the individual deposits in all the National banks in the country 34 years ago, and that in face of the fact that the population of the South today is 17,000,000 less than the population of the country was in 1880.

CONFIDENCE IN THE COUNTRY'S PROSPERITY.

HESITANT but hopeful is the attitude of productive elements of the country's population after months of uncertainty and doubt. Even though hesitation may prevail for a while longer, until certain governmental policies affecting productive energies have been definitely fixed, hope will not grow less. For it has reason in the confidence grounded in knowledge of the country's destiny as a participant in the progress of the world. The advance that the United States has made since 1800 is indicated in the increases of its population from 31,400,000 to 95,000,000; in the value of its manufactures from \$1,885,000,000 to \$24,000,000,000; in the value of agricultural products from \$1,750,000,000 to \$9,750,000,000; in the value of its mineral products from \$140,000,000 to \$2,200,000,000; in the value of its forest products from \$100,000,000 to \$1,200,000,000; in the length of its railroads from 31,000 miles to 252,000 miles; in the value of its exports to foreign lands from \$188,000,000 to \$2,500,000,000, and in its wealth from \$16,000,000,000 to \$135,000,000,000. In the case of some activities only an indication of possibilities has yet been given, but in the main the half-century of progress has fairly well demonstrated the part that this country is to continue to play in the material affairs of the world. This is sketched in the following table comparing broadly production in the United States at present with that in the world:

	The world.	United States.	Per cent. United States.
Area, square miles	50,600,000	3,000,000	5.9
Population	1,750,000,000	95,000,000	5.4
Corn, bushels	3,300,000,000	2,450,000,000	74.2
Wheat, bushels	4,126,000,000	763,000,000	16.0
Cotton, bales	21,817,000	13,696,000	62.8
Pig-iron, tons	73,000,000	30,966,000	42.2
Petroleum, barrels	380,000,000	242,000,000	63.7
Copper, pounds	2,251,000,000	1,243,000,000	54.8
Lead, tons	1,410,000	423,000	30.7
Zinc, tons	1,070,000	339,000	31.6
Gold, value	\$455,000,000	\$88,000,000	19.7
Silver, value	\$144,000,000	\$51,000,000	35.5
Coal, tons	1,440,000,000	562,000,000	39.0
Cotton spindles, active	144,000,000	32,000,000	22.2
Railroad mileage	650,000	252,000	38.8

These figures, which are round-number and, in two or three instances, in the absence of authoritative data, conservative estimates, show that the United States, with an area of 3,000,000 square miles, or about one-seventeenth of the area of the globe, and a population of 95,000,000, or slightly more than one-twentieth of the population of the world, is producing 2,450,000,000 bushels, or 74.2 per cent. of the total corn crop of the world; 763,000,000 bushels, or 16 per cent. of the wheat crop; 13,696,000 bales of 500 pounds each, or 62.8 per cent. of the cotton crop; 30,966,000 tons, or 44.2 per cent. of the pig-iron output; 242,000,000 barrels, or 63.7 per cent. of the petroleum; 1,243,000,000 pounds, or 54.8 per cent. of the copper; 423,000 tons, or 30.7 per cent. of the lead; 339,000 tons, or 33.6 per cent. of the zinc; \$88,000,000 worth, or 19.7 per cent. of the gold; \$51,000,000, or 35.5 per cent. of the silver, and 562,000,000 tons, or 39 per cent. of the coal. The 32,000,000 active spindles in this country's cotton mills constituted 22.2 per cent. of the total active spindles in operation in the year ended August 31, 1913, and the 252,000 miles of its railroads are 38.8 per cent. of the total railroad mileage of the world.

It may hardly be expected that the rates of advance in main lines of production since 1800, such as more than 1230 per cent. in manufacturing, more than 400 per cent. in agriculture, more than 1500 per cent. in mining and more than 1000 per cent. in lumbering, are to be maintained in the future. In the second half of the last century inventions in manufacturing, transportation and communication let loose and organized enormous mechanical and human energies directed upon the exploitation of practically virgin agricultural, timber and mineral resources. That epoch was unique. There is, of course, a limit to production of mineral wealth. Exhaustion of the forests, which has been threatened by the inroads of the lumbermen upon them measured now by an annual cut of 40,000,000,000 feet, can be prevented by wise conservation, and not only arable land now under cultivation be made to double its production, but the cultivated area may be doubled so that the annual agricultural production of the country may be \$40,000,000,000.

Of 1,900,000,000 acres of land in continental United States, 1,140,000,000 acres, including areas to be cleared, drained or irrigated, are tillable; 361,000,000 acres are suitable for fruit growing or pasture, and 399,000,000 acres are of no agricultural value. Only about 311,000,000 acres, or 27 per cent., of the possible tillable area are under cultivation. In order to assure the country that it will continue to have a constant source of supply of lumber, the present area in woodland, 544,000,000 acres, should be maintained, even if it be not enlarged. Such a policy, however, would hardly prevent the tillable area and that devoted to pasture and fruit growing from being increased to 900,000,000 acres, and the application of the policy of practical conservation to farm operations would easily induce an agricultural production sufficient to meet the needs of a population of 500,000,000.

At present the population of the United States averages about 32 to the square mile. With a population of 500,000,000 the average density would be about 166, or less than one-third the density of Rhode Island, the most thickly settled State in this country. This population would be slightly less than thrice the aggregate population of eight European countries—Norway, Sweden, Denmark, Holland, Belgium, Germany, France and the United Kingdom—in which the average population per square mile is 199. Even then this country, with its much greater supplies of materials for the support of humanity, would hardly approach the crowding of Belgium, with an average of 608 persons to the square mile; of England and Wales, with 618; of

Germany, with 311; of France, with 190, or of Denmark, with 175 persons to the square mile.

When farming methods, which the pressure of increasing population has made compulsory in such foreign lands as Holland, Belgium, France and Germany, have been applied to the lands of continental United States, which can produce practically every crop of the world and which are especially adapted for the cultivation of such crops as corn, cotton, rice and tobacco, European countries will look to this country for more of their food supplies than ever, and the demand will be met without diminishing the supply required for our own people.

Economic necessities in foreign lands will, in the meantime, have increased vastly the population of this country by immigration of millions, seeking a livelihood in productive activities.

Basic for material progress is the iron industry. The whole of Europe has an estimated supply of 12,000,000,000 tons of iron ore, capable of yielding 4,733,000,000 tons of metallic iron. The estimated supply of the United States of ore of present commercial value is 7,500,000,000 tons, capable of yielding 3,300,000,000 tons of metallic iron, and that estimate does not include 2,000,000,000 tons of Cuban ores, some of which are already used in this country, together with other foreign ores. It is likely that the native ores will have greater and greater accessions from abroad because of this country's fuel resources for the iron and steel industry. In five Southern States alone is 75 per cent. of the coking coal of this country, the workable coal fields of which have an aggregate area of 328,000 square miles, containing 3,150,000,000,000 tons of coal, compared with 44,000 square miles of such fields in Europe containing 418,000,000,000 tons. It will be easier, as the coal resources of Europe are exhausted, to bring its iron ore to the fuel and the fluxing material of this country than to reverse the movement. It is not at all unlikely that hydroelectric energy will supplement mineral fuel in Europe, but even in that respect the United States may be expected to excel.

This country's annual output of coal has a value \$200,000,000 greater than the annual output of all the gold mines of the world, but that amount is less than one-third of the value of the output of the mines and quarries of the country, including 1,243,000,000 pounds of copper, valued at \$205,000,000; 242,000,000 barrels of petroleum, valued at \$176,000,000; 58,000,000 tons of iron ore, valued at \$107,000,000, and \$92,000,000 worth of gold, \$85,000,000 worth of natural gas, \$80,000,000 worth of lead and zinc, \$78,000,000 of stone, \$67,000,000 of cement, \$39,000,000 of silver, \$22,000,000 of sand, \$14,000,000 of lime, \$12,000,000 of aluminum, \$12,000,000 of phosphate rock, \$10,000,000 of salt, \$6,000,000 of sulphur, and borax, bromine, bauxite, pyrite, asbestos, asphalt, feldspar, fuller's earth, mica, graphite, talc and soapstone, and a score or more of minerals which, with the perfection of chemical processes, are becoming more and more essential in manufacturing industries.

The Portland cement industry, a growth of the past quarter of a century and now rapidly approaching a 100,000,000-barrel output, indicates the possibilities in our mineral resources, just as the equally dramatic development of the cottonseed-oil industry, with its annual crude products, valued at \$150,000,000, indicates the range which agricultural production may still take. More than 100,000,000 spindles in cotton mills of other countries than the United States look to the South for more than a half of the raw cotton they consume. The mills of this country consume less than 40 per cent. of the American cotton crop. As long as one pound of American-grown cotton is exported in the raw state, so long will there be opportunity for expansion in the American textile industry.

Although the railroad mileage of the United States increased more than eight times between 1860 and 1913, railroad extension in the past 10 or 12 years has not been at as rapid a gait as in the earlier 40 years. Since 1900 an average of only 4500 miles of railroad has been built each year, while between 1880 and 1890 the average was 7300 miles a year. To meet the great transportation requirements of the country at least \$5,000,000,000 must be invested in steam railroad construction and equipment within the next 10 years. And that in spite of other hundreds of millions of dollars invested in electric lines and in motor vehicles.

To bring all possible tillable land into proper conditions will require the drainage of 76,000,000 acres of land, and the total area susceptible to economic irrigation to the same end aggregate quite as many millions of acres.

Streams of this country have an estimated maximum horse-power of more than 60,000,000, or, with full provision for storage and maintenance of flow and with every available site utilized, at least 200,000,000. About one-tenth only of the estimated maximum horse-power in present conditions has been developed.

Utilization of so-called wastes in coke making, in copper smelting, in lumbering, in meat packing and other industries has advanced sufficiently to encourage the greater endeavor in such fields.

These are a few of the many considerations which lead broad-minded and farsighted Americans to view the future of this country with equanimity, no matter how disturbing at times may be the manifestations of social and economic flux.

INCOME TAX CHICKENS COMING HOME TO ROOST.

LEGISLATIVE cobblers and tinkers responsible for the Federal income tax law, who for four months have been subject to the righteous indignation of harassed business men and individual citizens, may now prepare themselves for an accretion of equally righteous indignation by way of employees of the Internal Revenue Office at Washington. There will, of course, be fear of talking out in meeting, but the feeling will, nevertheless, be there, and it will be eminently justified. For, with March 1, the Internal Revenue Office will enter upon the second act of the tragedy. Its prologue was given in the first annual report of Secretary of the Treasury McAdoo, based upon the unreasoning optimism of concoctors of the income tax and the interpreters thereof in these words:

It is estimated that there are 425,000 individuals subject to the income tax. The number of corporations making returns to the Department for the calendar year 1912 was 305,336, but of these 244,239 claimed no income or a net income of less than \$5000, and were, therefore, not subject to taxation. Under the new law all corporations having any net earnings whatever are subject to the payment of an income tax, whether their earnings be more or less than \$5000. It is expected, therefore, that approximately 150,000 corporations which have heretofore been exempt will now be required to pay an income tax.

If to the 425,000 individuals supposed to be subject to the income tax, according to Government estimate, are added 275,000 individuals, according to equally reliable estimates, not subject to the income tax, but subject to much trouble and annoyance in making returns to prove that they are not taxable, and 220,000 corporations subject to the tax, the number of income tax accounts to be handled by the Internal Revenue Bureau will approach a million, and the number of affidavits, certificates, etc., thereunto pertaining will approach probably 3,000,000 or 4,000,000.

The law says that all assessments shall be made by the Commissioner of Internal Revenue, and all persons shall be notified of the amount for which they are respectively liable on or before the first day of June. How will the Internal Revenue Office interpret that provision? That is a fair question based upon the circumstances.

In 79 working days the Internal Revenue Office must, according to law, untangle the knots created for intelligence by the regulations attempting to administer impossibilities of the law. Will it be possible for the Internal Revenue Office, even with the aid of the \$800,000 specially provided for the purpose and of the relaxing of the provisions of the civil-service law, be able to accomplish the task? Consider for a moment its perplexities.

Within less than a month after the passage of the act, and before the Internal Revenue Office was, itself, certain that its own regulations for the administration of the law were correct, corporations and persons subject to the provisions for withholding the tax at the source, especially in the case of bond interest represented by coupons, were required to obey those provisions. So little publicity had been given to the law that in some cases withholding of the tax at the source was undertaken where the income was especially exempt from the tax.

The situation was complicated by divers and sundry lucubrations from the Internal Revenue Office, which for profundity of lack of meaning or for possibility of any and every meaning would have paralyzed with envy the Delphic oracle. Then came a series of forms and regulations, some of them revealing either ignorance of the law or deliberate disregard of it, reversals of interpretations or essential modifications of them, and eleventh-hour changes in such important documents as Form No. 1040 for the return of individual income. Confusion was confounded by the essays of "experts," beginning with that of the official who was contemporaneously appointed to have special charge of the income tax matter in the Internal Revenue Office, to enlighten potential taxpayers, but succeeding in some cases in adding to their difficulties. Attempts were made to speed up the making of returns, some internal revenue collectors setting the example; now and then persons referred to collectors for information and documents discovered that they had correct information ahead of the collector, and some collectors made the mistake of attempting apparently to interpret the law without proper guidance from Washington.

Only the examination of the hundreds of thousands of returns will reveal the extent of the flabbergastation resulting from attempts to meet the requirements of the law and its prophets. To estimate the burden of assembling, checking up and analyzing intelligently the products of the anxieties of the past four months would be impossible. But a hint may be ventured.

The task of creating a basis for assessment must be accomplished either in the offices of 60-odd collectors of internal revenue, or in that of the Commissioner of the Internal Revenue at Washington. Granted, for the sake of simplicity, that all the material will be at hand in some shape or other by March 1, there will remain 79 days in which to handle at least 3,000,000 separate documents. That means the handling of 38,000 documents a day, or something like 3000 an hour in a working day of 12 hours, or more than 50 a minute, or nearly one to each second. A force of 500 really expert accountants thoroughly acquainted with the minutest details of the law and the Treasury regulations might be able to dispose of the material at the rate of 76 documents a day, or an average of a little more than six an hour. In doing that they would be exceeding greatly the speed with which the preliminaries of the returns have been disposed of by the Internal Revenue service. In view of these facts, and gauging the future by the past, it is fair to presume that the Internal Revenue Commissioner will be unable to comply with the provisions of the law compelling the assessment to be made not later than June 1, or will be obliged to discover some cryptic meaning contrary to the plain English of the text. At any rate, he is likely to be in a state of mind ready to welcome an immediate revision of the law by the Congress, or the otherwise inevitable overturning of it by the United States Supreme Court.

THE OLD GAME OF COMBATING RESTRICTIONS UPON IMMIGRATION.

IT is believed that Congressman C. P. Coady of Maryland, who is something of a novice in affairs at Washington, was put upon a cold trail the other day at Baltimore when he received an impression that natives of foreign countries are being warned by means of a doctored map against settling in the Southern States. Something of the kind may have been done 15 or 20 years ago, and a copy of such a map then circulated may still survive in obscure quarters. But in the past 20 years there has been a radical change in the character of foreign immigration to this country, and the elements now dominating in it would not be influenced against settling in the South by any maps emphasizing the number of negroes in that section. The dominant elements in immigration of today are either of negroid stock themselves, according to some opinions, or have none of the instincts of Northern European stocks against mingling with negroes. Therefore, the circulation of such a map in this day, as alleged in apparent good faith last week at Baltimore, would be a waste of energy and would be absolutely contrary to a long main-

tained and persistent scheme appearing in divers forms and not infrequently behind some organization calling itself "Southern," and backed unwittingly by Southern men to persuade the South to permit itself to become the special field of immigration to be exploited by agencies in this country or in Europe of alien character or with alien alliances that have not the slightest personal interest in the real welfare of the people of the South.

If Congressman Coady could take the time and the trouble to run back through the files of the daily press of the past 10 years, he would discover that, almost invariably, whenever the Congress has attempted to raise the bars against the hordes of undesirable aliens being dumped into this country, either there have been impertinent protests from foreign sources openly or through their representatives in this country, or attempts have been made to beloud the issue by vague talk of opposition in European countries to their citizens migrating to the South. The cold trail struck by Congressman Coady leads back, it is believed, to that sort of honeyfugling or truculence.

As the MANUFACTURERS RECORD has suggested before, the end sought in the literary test for immigrants would be gained by providing against the admission of any intending immigrant coming by any vessel subsidized by any foreign nation, or of any immigrant who may have received assistance in getting away from his native land by any kind of organization in this country or in his own. Meanwhile, men who have followed the developments for many years recognize a degree of justification in Congressman Burnett's position:

I do not care if the Southern European is prejudiced against the South. We do not want that class of immigration in our section.

Many Southern Europeans would make most desirable additions to the population of the South. Few of them, however, are among the elements that opponents of further restrictions upon immigration would foist upon the South. Neither material ambitions nor higher motives should lead the South to countenance any scheme that would degrade the ultimate population of the South through the infusion of the classes of population of Southern Europe now clamoring for admission to this country.

COTTON IN COMMERCE.

THOUGH there was a decrease in the amount of cotton exported from the United States in the first seven months of the present fiscal year, there was an increase in the value of such exports of \$38,415,218, the largest increase in the group of breadstuffs, cottonseed oil, cattle, hogs and sheep, meat and dairy products and mineral oils having an aggregate value equal to nearly 70 per cent. of the total value of merchandise exports in the seven months. The comparison of these groups in the seven months of the present fiscal year and the preceding one is made in the following table:

	1913.	1914.
Breadstuffs	\$125,047,249	\$106,375,949
Cottonseed oil.....	11,056,098	7,917,584
Cattle, hogs and sheep.....	627,499	543,333
Meat and dairy products.....	68,010,396	83,016,087
Cotton	413,361,834	451,777,052
Mineral oils.....	76,802,904	88,977,714
Total.....	\$694,905,980	\$738,607,719

Among the six groups there were increases from \$413,361,834 to \$451,777,052, or by \$38,415,218, in cotton; from \$68,010,396 to \$83,016,087, or by \$15,005,691, in meat and dairy products, and from \$76,802,904 to \$88,977,714, or by \$12,174,810, in mineral oils, and decreases from \$125,047,249 to \$106,375,949, or by \$18,671,300, in breadstuffs; from \$11,056,098 to \$7,917,584, or by \$3,138,514, in cottonseed oil, and from \$627,499 to \$543,333, or by \$84,166, in cattle, hogs and sheep, making a total increase from \$694,905,980 to \$738,607,719, or by \$43,701,739.

The Chamber of Commerce of Cordele, Ga., has issued a booklet telling of the progress and prospects of the city and its surrounding territory and telling of the desire to have establishments for the manufacture of peanut butter and peanut oil, denatured alcohol and a year-round cannery.

Billions for Betterments Needed by Railroads

[Editorial Correspondence Manufacturers Record.]

Daytona, Fla., February 21.

If President Wilson, in his desire to unfetter the commercial interests of the country, as he has on numerous occasions indicated his anxiety to do, could give a study to our transportation interests, he would soon realize that the greatest business problem which the American people face is that of inadequate railroad facilities.

For years the MANUFACTURERS RECORD has been persistently emphasizing the need of a larger amount of railroad building, of better terminal facilities, of better roadbed and of more rolling stock. If these letters return again and again to the subject it is because wherever I study the problem in person, whether in the Southwest, in the Central South or along the Atlantic seaboard, I am more and more impressed with the vital importance of a vast betterment in railroad conditions.

The progress of the South is in danger of being seriously halted unless there shall come about an expansion in railroad facilities on a scale far greater than anything that has ever been seen in railroad building in this section.

In the Southwest last spring the pressing necessity for more railroad facilities was seen in every direction throughout a journey of some thousands of miles. That the Central South has been growing more rapidly than its railroad facilities, despite the vigorous efforts of the Southern Railway to improve its roadbed and double-track much of its line, is fully recognized by every intelligent business man as well as by the railroad people themselves. In the Southeastern section, on down the coast into Florida, there is a lamentable situation rapidly developing.

More than \$83,000,000—an enormous sum for one road to spend—has been expended within the last three years by the Baltimore & Ohio Railroad in bettering the conditions of that system, according to a statement made by last week by Chief Engineer Stuart. And yet Mr. Stuart points out that the problem of the Baltimore & Ohio is not that of finding business, but of trying to handle business that is offered to the road. He says:

"In my opinion, after improving our efficiency, after largely increasing our facilities in general, and after judiciously spending \$83,000,000 in the last three years to better our condition, our needs are so great that we are not only not keeping up with the legitimate growth of business in our territory, but are falling behind."

Several years ago it was freely stated that when the Southern Railway had in 10 years expended \$100,000,000 in improving its condition it was less able to handle the volume of business then offered than it had been before it begun the expenditure of that sum, for the business had grown faster than the expenditure had increased the facilities. Commenting on this railroad situation, Mr. Stuart adds to his recent article the following:

"The entire country today faces a grave and serious condition in the present relationship between the amount of business which the country is now offering and the additional facilities which the railroads must have to handle it so as not to stop the normal growth of that business."

Mr. Stuart is merely bringing once more to public attention that which every careful student of the situation during the last five or six years foresaw as a result of the outcome of the conditions prevailing. Business is outgrowing the railroads, and outgrowing them rapidly, despite all they are trying to do to keep up with it. So far as the South is concerned, the development of this section could be enormously advanced if the railroads were equal to financing their needs and if all of the men dominating the railroad situation of the South fully grasped the potentialities of this section.

The South needs, and needs badly, a great giant leader in railroad work and in empire building. It needs a Harriman or a Hill; a man who can combine the control of capital without limit and who has the daring genius to lead in a country's development.

Probably no other man ever identified with the Southern railroad situation had such an opportunity as that which faces Mr. H. Walters, the controlling owner of the Atlantic Coast Line. More than 30 years ago William T. Walters and B. F. Newcomer, two of Baltimore's leading merchants, and their associates had a

vision of the future of the South, and backed their faith in this section by securing control of the Atlantic Coast Line. If I remember aright, Mr. Walters was an engineer by profession, though for years he had been one of the largest merchants of the city, and in that way had accumulated large wealth. In those early days Walters and Newcomer and Michael Jenkins, also of Baltimore, became the dominant owners of the Atlantic Coast Line. Mr. Jenkins is still in the land of the living, and still a powerful factor in the Coast Line, for he has never lessened his interest or his faith in the road or in this section. Mr. Walters passed away, leaving his son, Henry Walters, to take his place in the ownership and management of the Coast Line. Mr. Newcomer left his son, Waldo Newcomer, and other members of his family his great interest in that road.

The Atlantic Coast Line owns a controlling interest in the Louisville & Nashville Railroad, which puts into one management about 11,000 miles of road. It is generally understood that Mr. Walters owns a majority interest of the Atlantic Coast Line, and in this way owns a controlling power in the 11,000 miles of these two systems. He thus absolutely dominates by ownership one of the greatest railroad properties, considering its inherent possibilities, in the world.

The Atlantic Coast Line and the Louisville & Nashville Railroad have tributary to them a country that has no equal for extent of resources and variety of advantages of any other area of similar size anywhere else in the world, outside of the South.

There is wealth enough in the territory tributary to these lines to enrich, not simply an empire, but a continent.

There are more natural resources available for development in the region dependent upon these two roads for transportation than exists in Great Britain and Germany combined.

The resources of the country whose development made James J. Hill rank as one of the empire builders of the world are small as compared with the resources of the country which must look to the Atlantic Coast Line and the Louisville & Nashville Railroad for development or remain only partially developed. The whole Pacific coast, indeed, all of the Pacific coast and all of the Central West region tributary to the Union Pacific Railroad cannot show such a wealth of wealth-creating potentialities as that region over whose destiny Mr. Walters, by virtue of his railroad ownership, holds such a dominant power.

Mr. Walters is a comparatively young man, younger, I believe, that was Mr. Flagler when he took up the great work of the development of the East Coast of Florida. He is in the very prime of life, with vigor of body and mind and with the ability to command capital for his road and the territory tributary to it, fully matching that of Harriman or Hill because of the fundamental soundness of the financing of the two roads and because the world recognizes that this Southern country is the place for the safest investments.

The Louisville & Nashville and the Atlantic Coast Line have both been busy during the last few years with construction work, in double-tracking and in other improvements. This is especially true as to the Louisville & Nashville, though it has not measured up to its opportunities as Harriman and Hill measured up to theirs in the Northwest and on the Pacific coast.

There was a time when the Atlantic Coast Line was regarded as the "Pennsylvania Railroad" of the territory from Richmond to Tampa. That day has passed. The Coast Line is not regarded with as much favor today as in former years. I regret to say that it is severely criticised by many throughout its territory, as well as by travelers from other sections. Some days ago one of the foremost manufacturers of the North, in discussing the situation, said that his experience showed that while the Coast Line had a better track than the Seaboard, yet in its general service from the morale and attentiveness of its employees down to its dining-car service it was inferior to the Seaboard. That about voices the sentiment heard throughout this region. Years ago the Seaboard was the joke of travelers and the Coast Line was almost universally commended.

Because of the long identification of the Coast Line with Baltimore and its domination in reality as well as

in name by Baltimoreans, I am sorry that this is true. I wish I could write that the Atlantic Coast Line maintains its reputation as the Pennsylvania Railroad of the South, but I cannot do so in view of the persistent criticism which I have heard for the last two or three years from travelers and shippers over the road and from those who are interested in the development of this section.

Mr. Walters may perchance resent the suggestion, and yet it is true, that in his domination of the Atlantic Coast Line and the Louisville & Nashville and in his command of capital he has the opportunity to make for himself as great a name as Harriman or Hill, the empire builders, and still maintain the untarnished reputation which he enjoys of having handled the finances of this line in such a way as to give to the smallest stockholder exactly the same advantages that are always given to the largest. Indeed, it has been repeatedly said that when Mr. Walters proposes to the directors any movement, financial or otherwise, which looks to the bettering of the road or the stock, he requires that every director shall bind himself not to buy or sell a share of stock within 24 hours after the matter has been made public. Whether this be true or not, it at least explains the high reputation in financial circles which he enjoys. If, with this reputation and the wealth back of him, he would throw his whole soul into making the Atlantic Coast Line what it ought to be—the Union Pacific road of the South—he would double the development of the section tributary to his line and would himself be amazed at the marvelous progress which would follow such an infusion of managerial activity and ability.

The Atlantic Coast Line, like the Louisville & Nashville, has been doing a good deal of double-tracking. It has improved its condition in many respects. It is doing some things for the development of the country tributary to it, but its people have never yet shown that they have caught a vision of the limitless possibilities of their country. Indeed, some inside circles in the management of the road have repeatedly expressed the thought that its territory was mainly an agricultural region and was not fitted for industrial development. And yet its lines stretch from Richmond, one of the great industrial centers of the country, to Tampa, the greatest cigar-making place in the world—a country having a wide variety of resources for manufacturing, in addition to resources in soil and climate capable, if properly utilized, of bringing about a larger development and greater wealth than that of California.

Does Mr. Walters fully understand the resources of the country tributary to his lines, and is he ready to do, in proportion to the opportunity, what Flagler did for the East Coast of Florida, what Harriman did for the West and the Pacific Coast, and what Hill did for the Northwest?

It is time for an empire builder whose work would be of commanding influence in the world to appear upon the scene of railroad activity in the South. Who is the man? Will it be Walters, or will it be Fairfax Harrison of the Southern or Harahan of the Seaboard or some one not yet visible on the horizon?

A New York capitalist who has been instrumental in putting many millions of dollars into the South, especially in hydro-electric developments, some time ago, in speaking of this section, said:

"The South is sleeping on billions of value."

There are, indeed, billions and billions of values over which railroads run without some of their officials realizing the extent of these values. There are billions and billions of untutilized wealth over which the people of the South are equally sleeping when we contrast how much remains to be achieved with what has already been accomplished. Here and there are to be found men who see the situation and who are trying to make the most of it.

Some 12 or 15 years ago John Skelton Williams, when he had welded together a lot of disjointed lines between Richmond and Jacksonville, realizing something of the possibilities of Florida, dared to buy the road from Jacksonville to Tampa at a time when many of her railroad people had little faith in Florida. One of the chief officials of the Southern Railway said to me a few years ago that it was only within the last five or six years that they had taken Florida at all seriously. "We had looked upon Florida," said he, "as a section of comparatively small importance except for a little tourist travel during one or two months in the year." If some of the officials of the Southern Railway, in the early days, had had a vision of Florida equal to that of Flagler, or later on of Skelton Williams, that road would before this doubtless have extended its line far into the

State. It is a pity that the Southern Railway, with its 8000 miles of track, and recognized as the foremost railroad system of the South, does not have its own through lines into the heart of this State. It would be good for the State, but it would be still better for the railway.

It is fortunate that the people who have fallen heir to the work done by Skelton Williams are recognizing the possibilities of Florida as well as of the country between Richmond and Florida. The Seaboard people are spending what may be called a very large amount of money in bettering the condition of the system all the way from Richmond and Norfolk to Tampa. It is a large amount when viewed in one way, but not large when viewed in the light of the opportunity and the needs.

Three years ago, through personal letters from Tampa and through the MANUFACTURERS RECORD, I strongly urged the importance of the Seaboard buying the Tampa & Northern road and extending it up the West Coast. The road was bought. Its extension will open up an entirely new condition in the railroad situation in Florida.

The Seaboard Air Line is double-tracking a good deal of its system in North Carolina, and it is wisely magnificently advertising the "Sand Hill" section of Pinehurst and Southern Pines in North Carolina and Camden in South Carolina as health and pleasure resorts. In the last few years it has made the Manatee section of Florida widely known throughout the United States, and the growth of traffic in that section has been so surprisingly large that the Seaboard officials are not interested in letting the public know how rapidly their business is increasing over on the West Coast of the State.

The development of that section, like the development of much of Florida and much of the whole South, is only in its infancy. The Seaboard is making some progress in the bettering of its facilities, but its business is going to grow faster than its facilities. The roads that come into Florida are not equal to handling expeditiously the business that is being offered in the State. For weeks this winter travelers to Florida found it difficult to secure Pullman accommodations, and many engagements had to be made weeks ahead. Even now, when the movement out of Florida ought not to have started, and when nobody ought to be thinking of getting away from this climate, engagements are being so freely made for the Northbound trip. Tourists who want to remain in the State are making engagements weeks ahead and getting a little panicky because of the uncertainty as to whether they can get out at the time desired. It would seem that it ought to be possible for the Atlantic Coast Line, the Seaboard Air Line and other roads entering this State to provide enough special trains so that when people want to come to Florida they could secure accommodations without having to make engagements ahead, and that in the spring they ought to be able to know that they could get out of the State without having to make reservations for the Northbound trip weeks in advance. In many things the railroads are doing splendid work worthy of all praise. In a good many things they are falling short. For instance, the stations in this State, and many in other States, are miserably insignificant and inadequate for the needs of travelers, and a good many of them are so insanitary that they deserve to come under the condemnation of the State officials.

No one recognizes more fully than I do the difficulty the railroads have had in finding money; no one sympathizes with them more than I do in the troubles which they have had to meet in the way of adverse legislation and of lack of capital to do the things needed, but most of the roads cannot come into court with a clean bill of health, a prerequisite to fair judgment in every court. The traveling public has a right to expect better conditions, less overcrowding of cars, less incompetence of clerks, less inattention at the majority of depots and more effort to make traveling easier. There is not a department store in the country that could survive for six months if its clerks were as inattentive to the needs of the customers as are many railroad clerks to the needs of the traveling public. Some railroad officials have often taken me to task for making similar statements, but every traveler knows that they are true, and every traveler knows that much of the hostility to the railroads would never have developed if the railroad people, from the presidents down to the conductors, and especially to the clerks in the ticket offices and depots, had been as attentive to their customers and as anxious to please as are the clerks in every reputable business house.

The railroad people too often make traveling difficult, and thus create enmity, when by better methods they

could lessen the inconveniences of travel and make friendship. It will never be possible to measure the tremendous loss to the railroads, in enmity developed, in money kept out of railroad securities, in hostile public sentiment by "the public be damned" spirit which, voiced by one man, was for many years the dominant thought of thousands of railroad people. The railroads have paid a fearful penalty. Now they need the heartiest encouragement of the public; they need higher freight rates and less hostile legislation, that they may for the public welfare be able to spend billions in betterments. The next sufferers will be the people unless the people turn and cease their thought of "the railroads be damned," for the people will pay the next penalty unless an immediate change comes about. R. H. E.

NEW ORLEANS COTTON WAREHOUSES.

Sale of \$3,000,000 Bonds Assures Success of the Project.

Considerable interest attaches to the announcement that the Board of Port Commissioners of New Orleans, Robert G. Guerdard, president, has sold \$3,000,000 of bonds, the money secured thereby to be used for the construction of a system of cotton warehouses. This sale is regarded by the commercial interests of New Orleans as most important, because it provides for the establishment of a cotton-handling system which will inaugurate a new era in the cotton business of the city and increase the importance of New Orleans as one of the great concentrating cotton ports of the South. Definite plans for the erection of the warehouses have not been worked out, and probably will not be for 60 or 90 days, but tentative plans provide for six structures, to cover about eight acres. The six buildings will each measure approximately 600x100 feet, eight stories high, the top floor to be enclosed in glass. They will be of fireproof construction and equipped with the most modern cotton-handling devices. It is estimated that a total of 3,000,000 bales of cotton can be handled during one season. Samuel Young, engineer for the board, will probably prepare plans and supervise construction.

Referring to the success in marketing these cotton warehouse bonds, the *Times-Democrat* of New Orleans says:

"The fact that the sale of these dock bonds has been accomplished so soon after the large issue of State bonds was taken up shows the excellent credit the State enjoys. The Dock Board could with difficulty have handled the latter transaction had not the State debt been settled and disposed of January 1 by the satisfactory and definite and final settlement then reached. Louisiana has never before handled two such important transactions in so short a time—the negotiation of two bond issues of \$11,000,000 and \$3,000,000, respectively, within a few weeks of each other. The members of the Port Commission are entitled to credit for their splendid handling of the transaction, which was so quietly done and without any blowing of trumpets, through the aid of three local banks, the Whitney-Central, Hibernia and Interstate.

"The selling of the bond issue, which had been delayed so long after the authority was granted, is in itself a most encouraging sign, for good credit is a valuable asset to every community. Even more encouraging is the stimulus that the proposed warehouses will give to our cotton trade. Although New Orleans has lost a part of the cotton business it formerly enjoyed; although it handles and ships a smaller percentage of the Southern crop than of old, it is still looked up to throughout this section as a center of the trade. It lies in the very heart of the cotton-producing section, within easy reach of all the great cotton-producing States. It possesses through years of experience and study all the information affecting cotton, and it has led many a battle for the protection and prosperity of the industry. What it has lacked has been the best facilities for handling the cotton, for storing it, for marketing the crop quickly and satisfactorily; in fine, it has lacked the system of warehouses, the money for which will be provided in the next few weeks from the sale of the Port Commission bonds. Our docks and wharves have been improved, are under State control and * * * now that warehouses have been provided for, in which the crop can be stored, marketed and sold under the most favorable conditions, and the farmers enabled to hold their cotton for good prices, it will naturally restore to the city a larger share of this business."

American Coal and the Panama Canal

By F. E. SAWARD, Editor

of the *Coal Trade Journal*.

Ten years ago, when the Panama Canal bill became a law, I wrote the *MANUFACTURERS RECORD* something of its possibilities so far as the coal business of this country was concerned. That is to say, the opportunities for trade in that direction, and now that the gigantic work is completed, perhaps something further will be of interest. Large quantities of fuel have been used in the construction work, and we may now face the possibilities of trade through that channel.

One may fairly state that the construction of the canal will do more for the development of trade, for the industries of our country, than any public enterprise in the history of our country as a nation. It opens up a waterway from one ocean to the other. In this it rivals the building and opening of the railroads across the continent, greeted with such applause in 1869. Its value to the commerce of our country will exceed any revenue derived from the purchase of Alaska in 1867, and that has surely proven to be a most excellent bargain. It offers a short route to our island possessions in the Pacific Ocean, giving us, if that were needed, a more secure hold thereon, from a commercial standpoint at least. The ultimate destiny of this country to control the trade of that Western ocean, on the Asiatic as well as on the American side thereof, becomes more real, more potent.

All around the globe it is necessary, proven by our naval requirements during the last war, to have coaling stations, and many of those in the Western seas not now regarded as our trade could be supplied at low cost with the product of American mines. It is a most interesting situation which confronts us, and of the greatest moment of many of the industries of the United States, and to none more so than the coal trade. An English coal trade paper says:

"It is easy to exaggerate the consequences of the opening of the Panama Canal so far as our coal trade is concerned, and we feel sure that British exporters having connections with markets likely to be affected at all are fully alive to possible dangers and are taking steps accordingly."

At the same time, a gentleman interested in West Virginia coal states:

"I believe that the opening of the canal will be very beneficial to American coal. The Englishmen do not so regard it, however, and they said they did not believe it would affect their trade one way or the other. Now we send Pocahontas coal down into South America, much of it going to the Pacific coast of that country, and I am certain the canal will be beneficial to us by cutting off two-fifths of the journey. I do not see why the Englishmen do not regard it as beneficial to them also, for they will have much shorter transportation and much less freightage."

Former Governor MacCorkle of West Virginia has said:

"In the great matters of world-trade, the laws of competition are as absolute as in the personal affairs of everyday life. If we control any part of this great market it will be by the most virgous competition which has ever been witnessed in the trade affairs of the world. All of Asia, Australia and the East generally are nearer Europe by the Suez Canal than by the Panama route. The question of cheap fuel will largely control the bunker trade of the world if Europe uses the Panama Canal instead of the Suez Canal. One enormous advantage possessed by the Suez Canal is the fact that coaling stations along the great English coal routes are located so as to give the most perfect advantage to the trade of the world. If this country proposes to take any part of the steaming demand of the world from the English nation, it must provide an ample coaling stations for the ships of the world.

"There is another proposition that enters into this discussion. If these markets become as great for America as they should be, America must control the ships necessary for her trade and diversify her commerce in order to secure return cargoes. Only then may we send our products into every country and among every people."

A well-informed Pittsburgher said on a recent occasion:

"I am under the ban of silence as to personalities in these enterprises, but inasmuch as the vessels are now being built, and others are designed and figures on their cost here and abroad are being invited, it is not uncer-

tain that coal for oversea shipment is a probability that is as well assured as anything can be that has not already happened. This should relieve the home trade in some respects, in that it should operate to keep mines active for more than 200 days in the year, and bring back to the country large sums of money, at the same time stimulating foreign trade and relations in other branches of international commerce."

The Government coaling stations at Cristobal and Balboa are expected to be in operation before January 1, 1915. Temporary arrangements will be made to care for business offered before permanent plant is completed.

This story of the possibilities of the shipment of coal from any of the United States ports to other places by the advantages afforded through the completion of the great inter-ocean waterway, may well be concluded with the statement that there is now more of an effort being made to secure a large area of coal land in central West Virginia by foreign capital. In order to hold the trade and traffic which they now have in South American and Pacific ports, it is proposed to ship their coal

either from the wharves on the Virginian Railway or by those of the Chesapeake & Ohio on Hampton Roads. It is claimed by representatives of this enterprise that, owning the coal and also the collieries (now used by them in distributing their English coal tonnage), they will be in an exceptionally good position to hold the trade which they now enjoy.

Within the past few days there has appeared a statement upon the importance of this pathway from the Atlantic to the Pacific, evidently prepared in the interests of the capitalists referred to above, from which the following quotation is taken, which clearly bears out what I have said above:

"For many years Welsh coals have been the dominant factor in the world's steam commerce. It is only within the last few years the West Virginia coals, even by the United States Government, have been considered the equal of the Welsh. Generally today, for steaming purposes, the Welsh coals are better cleaned and prepared than West Virginia coals, and in most instances they have been rated 5 per cent. higher than the New River and Pocahontas coals of West Virginia. But where forced draft is needed—and it is very often needed in navigation—the New River and Pocahontas coals are the equal of the Welsh. One proposition is certain, however: no other coals can compete on an equal basis with the New River, Pocahontas and Welsh coals."

Virginia's Place in Forestry

Experts in forestry who have recently been taking stock of Virginia's forest resources and of the State's use of these resources find that the Old Dominion is peculiarly adapted to forest growth and to the maintenance of wood-using industries. As Caesar divided all Gaul, so they divide Virginia into three parts. These are the coastal plain, the Piedmont region and the mountain region.

The coastal plain, which comprises a large part of Eastern Virginia, contains some 7,000,000 acres, practically all of which is suited to agriculture. Two-thirds of it is cleared, though considerably less than half is actually in crops in any one year. It is par excellence a trucking region, and the raising of such crops requires intensive farming in order that fertility may be maintained. For a long time to come, forest experts say, it will pay best for private owners to maintain comparatively large areas of this land in timber, and to practice intensive farming, requiring a comparatively large outlay of money on limited areas of the best lands. Farm wood lots will always be necessary in this region to supply local demands for timber, and at the present time there are a number of distinct advantages in growing timber crops in preference to farm crops on all except the best soils.

In the first place, the annual outlay both in time and in money for the raising of a timber crop is insignificant. Various native pines spring up readily and thrive in this region. Furthermore, timber does not need to be cut if the current lumber price is low, since it can wait without deterioration until the market rises. Wood lots require very little supervision except for keeping out fire; furthermore, all the lumbering work on them can be done in winter, when labor is readily available. Thus they employ both men and draught animals at a time when they would otherwise be idle.

Forest officers think that it is particularly important that every farm owner in this region should realize the timber-growing possibilities of his farm, and that he should regard his stand of trees as a growing crop that can be greatly improved by proper attention, which includes, above all, protection from fire. Wherever a stand is lumbered and the land is not immediately needed for agriculture, provision should be made for securing a new crop of young seedlings. Natural reproduction can ordinarily be counted on to secure this new crop if fire is kept out.

This region is blessed, as foresters now recognize, with one of the country's best trees for forest management when grown within its natural range. Loblolly pine, otherwise known as oldfield, rosemary, or slash pine, is the most abundant tree in the region, and should form the principal tree crop for owners who wish to practice forestry. The financial possibilities following such management and the methods to be adopted are described in Bulletin No. 11, recently issued by the Department of Agriculture. This bulletin shows that it will be possible to secure crops of timber in from 20 to

40 years from seed, which will pay from 5 to 10 per cent. compound interest on an original investment of from \$5 to \$17 an acre. Loblolly will grow on a wide range of sites, and its timber is not only in demand in this country, but is exported to Europe and Central America. It has many uses in building construction, and is particularly suited to preservative treatment, such treatment greatly extending its usefulness.

Piedmont, or middle Virginia, contains the rolling country which gradually develops into foothills of the Blue Ridge, and is the best farming land of the State, and naturally one of the best in this country, if not in the world. But on every farm within this region there are areas which for a considerable time at least should be devoted to wood lots. Here short-leaf pine, which, however, is a slower-growing tree than loblolly, is the most profitable one for forest management. Its possibilities have been well described in a recent publication of the Virginia State Department of Agriculture.

In the mountainous western portion of the State, except in the State's far-famed agricultural valleys, the land is in large holdings and there are continuous areas of forests which should be kept in timber, according to Government experts, not only because these forests contain many valuable tree species and are the source and basis of a profitable lumber industry, but also because they protect the mountainsides against soil washing and help to maintain and regulate the flow of streams upon which the agriculture and commerce of the eastern part of the State so largely depend. In this area the Federal Government has already acquired several tracts for watershed protection purposes. Since this is naturally a forest region, and one in which timber growth will reproduce itself readily, the main care of timber land owners should be, according to the officers of the Federal forest service, to protect it from fire and to log it with an eye to the future.

THE INCOME OF CORPORATIONS.

Some Suggestions as to the Extent and Importance of Their Activities.

The report of the Commissioner of Internal Revenue for the fiscal year of 1913 dealing with the special excise tax on corporations under the tariff act of 1909 presents a mass of figures strikingly suggestive of the importance of corporations in the country's activities, and at the same time gives a line upon the possible returns from the income tax under the tariff act of 1913 into which the excise law has been merged with modifications. For the calendar year 1912 returns under the excise law were made by 305,336 corporations, of which 61,116 having a net income greater than \$5000 were subject to the tax.

It is expected that fully 150,000 corporations exempt in 1912 from the excise tax will be liable to the income

Ripening Strawberries and Blooming Flowers Versus Blizzards

[Special Dispatch to Manufacturers Record.]

Daytona, Fla., February 24.

Climate as an asset for a country's development is as tangible in its value as coal or iron or timber. Whenever the biting blizzards sweep over the North and West, leaving suffering, destruction and death in their trail, were the pre-eminent advantages of the South generally understood throughout the entire country, millions of people would seek this section, either for a permanent or a winter home. Even now railroads are overcrowded with tourists into the South, but if the South's climatic advantages were as widely known as they should be it would be impossible for years to come to have rolling stock enough to bring the people who would take up their march southward.

To hundreds of thousands in the far North and West who have to suffer six months of snow and ice and zero weather the short winters of the Piedmont regions of the upper South, and even some of the mountain sections, where nature has engirdled beautiful valleys by protecting mountains, would seem to make that region a Garden of Eden. To others, seeking a warmer climate, there is the great coastal plain stretching along the South Atlantic and the Gulf coast, taking in Florida and all the region that stretches to the Rio Grande. In this Southern country, with its mountain ranges, its Piedmont region of hills and valleys and the level country of the seacoast, there is every variety of climate that the heart of man could wish.

Today while the North and West are freezing, while millions are suffering, while railroads are blocked by great snowdrifts and many schools are closed because of the weather, there are signs of spring throughout Florida and the coast country, the trees are budding forth, the flowers are blooming, the birds are mating, and man and beast are free from the suffering of the death-dealing blizzards. In this climatic advantage the South has an asset worth billions in its material developments. This climate lessens the cost of living, lessens the cost of livestock raising, and makes possible outdoor work 12 months in the year. It gives to the fruit growers and the farmers productive power at least twice as great as that of their competitors in less favored regions.

In much of the coast region two, and even three, crops are being raised a year. In many parts of Florida the strawberry season is over. Tens of thousands of crates have been shipped out since December. Strawberries are being followed by early vegetables and all the varied products of a rich soil, under a life-giving climate. Before a Northern or Western farmer can begin to plow his fields or plant his spring crops the farmers in this section will have gathered in many cases at least two crops from the same land.

These climatic advantages will bring in ever-increasing numbers hundreds of thousands of people from other sections to share in the blessings with which heaven has so richly dowered this land. As rapid as has been the southward movement of the tourists, who already crowd the railroads and the hotels, it has scarcely begun as compared with the possibilities of the next few years if the railroads and the States of the South will do their part in letting the world know what this section has.

The MANUFACTURERS RECORD is anxious to see every section of our country prosperous. It would not want the South to grow rich through the destruction of any other section. But at such a blizzard time as this, which means suffering to millions and death to many, it is well to emphasize the facts here stated in order that the millions who should know more about the South and its advantages may have this situation driven home at a season when they will think more about it than at any other period of the year.

To the young and the old; to the hustling, active man who wants to join in the development of this, the most richly endowed country on the earth; to the middle-aged or aged man or woman who wants to spend the latter years of life away from the blizzards and the killing cold of the North and West, the South bids a hearty welcome, with the assurance that the experi-

ence of the tens of thousands who have already come is a guarantee that millions of others could come and find health and happiness and prosperity here.

RICHARD H. EDMONDS.

TO DEVELOP 25,000 HORSE-POWER.

Work Well Under Way on the \$1,000,000 Plant at Waco, Tex.

[Special Correspondence Manufacturers Record.]

Waco, Tex., February 21.

Work is now well under way on the million-dollar plant of the Texas Light & Power Co. on the east bank of the Brazos River, opposite the center of Waco, and it is proposed to have it completed and in operation by September of this year. It will develop 25,000 horse-power, and will be the most unique power plant of the kind the country contains, in that, instead of a hydro-electrical development for power and lights, this will be a development for such purposes wholly by steam.

The Strickland interests own and operate interurban lines between Denison and Waco, a distance of 187 miles, altogether the longest line in this middle west country, with also a branch line to Corsicana, tying on the line south of Dallas; also the city lines in Waco, Sherman and other points, together with a number of power and lighting plants in these and other cities and towns. The Texas Light & Power Co. is likewise a Strickland corporation. It has a recently enlarged power plant at Fort Worth with 20,000 horse-power capacity; a small plant at Denison, another at McKinney and a present plant at Waco of 3500 horse-power. In addition to the new Waco plant, the largest of the group, there will be constructed on the Oklahoma side of the Red River, four miles above Denison, a 20,000-horse-power plant, to cost about \$500,000. This will give the Texas Light & Power Co. a total of 65,000 horse-power, and when all the new plants are completed the smaller, older plants at Waco, McKinney and Denison will have become useless. The Denison plant must be built within three years from the date of franchise, some months ago, and while it is likely that it may be built much before the time limit expires, there have been no definite arrangements made as yet for beginning the work. As in the case of the other plants, it is proposed to furnish lighting and power for cities and towns within a wide territory—probably as much as 100 miles in diameter. In this case, towns and cities in Oklahoma, as well as in Texas, would be served.

The Waco plant will serve a very populous territory, and contracts have already been made for practically all the increased power that will be furnished by the Waco plant. A local campaign of education and solicitation has resulted in a number of industries and establishments arranging to abandon their own power and lighting plants and taking or contracting to take service from the Strickland company. In time a very considerable increase in new industries throughout the entire region in which power is available seems certain to occur, especially as a public campaign, through advertising and direct solicitation, is in contemplation by the company.

The plant at Waco is located on a 20-acre tract of ground on the east bank of the Brazos River, which area gives ample room for the present buildings and future extensions, as also for the necessary railway switch tracks for transporting materials, fuel, etc. The foundations for the buildings are practically completed, and grading for the railway roadbed and other grading work is well under way. There will be a boiler-room 62x200 and a turbine-room and switch-house 100x100. There is a condenser pit 22 feet to the floor level, and well 41 feet deep. As the banks are of sand, steel sheet piling was first driven to the extreme depth required, clay foundation 45 feet, the material between the walls then being removed by steam shovels. The foundations and retaining walls are of reinforced concrete construction throughout. The intake tunnel, also of reinforced concrete, is 36½ feet deep. It has an extreme length of 300 feet from the boiler-room to the intake crib, well out in the river. It is of double construction, the bottom tunnel being for intake purposes and the upper one

for outfall. Each has an opening 6 feet wide and 7 feet high, with arched roof.

The smokestack, concrete, will be 225 feet high, with a 16-foot flue. The General Concrete Construction Co., Chicago, has the contract. An equipment of cooling towers will be provided.

There will be an outdoor high-tension transformer and switching yard.

The walls of the building will be of brick, with independent steel frames.

The Virginia Bridge & Iron Co. has the contract for the structural steel; the Texas Portland Cement Co., cement; Lone Star Brick Co., Ferris, the brick. The Cleveland Construction Co. has the contract for general construction.

The General Electric Co. has the contract for all electrical equipment, which includes G. E. turbines, two generators, 6000 kilowatts each, etc.

There will be a battery of eight 600-horse-power Babcock & Wilcox boilers. Space for an exact duplication of turbines and boilers has been provided, so the capacity of the plant can be doubled at any time desired without great additional expense.

Sargent & Lundy, Chicago, are the engineers; G. B. Diem, resident engineer. ALBERT PHENIX.

The Birmingham Iron Market.

[Special Correspondence Manufacturers Record.]

Birmingham, Ala., February 23.

The recent heavy buying of basic and foundry irons in Northern and Western markets, and the disposition on the part of railroads to award their requirements as to rails and cars, has had an apparent good effect upon the local pig-iron market. There is a strong demand for foundry grades for prompt delivery, while only a small amount of third quarter requirements is now being sought. The evidence of this condition is brought out very conclusively by the entering of 8000 tons for delivery within the first half of the year at a price of \$11.50 per ton, No. 2 foundry basis, by a local interest during the week. However, brand and delivery played an important part in the effecting of this sale. The aggregate of the tonnage entered by the several local producers will probably show an increase over that of the previous week, and a fair number of consumers were represented in the trading. Of the 20,000 tons of foundry grades entered within the week, the bulk is for shipment covering the first half, and was sold in lots of 250 to 500 tons, and almost entirely for Southern territory. Price considerations in every instance, excepting the 8000 tons, were at figures from \$11 to \$11.25 per ton for No. 2 foundry at Birmingham. The entering of 500 tons of high-silicon standard iron is also reported as having been effected during the week. The present movement from furnace yards consists very largely of sales made within past 60 days, and it is not understood that the unfilled tonnage against old contracts is large in any case. It is also quite certain that none of the producing interests are accumulating stocks, while the tonnage sold to merchant interests for speculative purposes is so small, comparatively, that the forwardings against such contracts would hardly affect the situation. Although there is still some tonnage on warrant yards, sales of such tonnage is not expected to become a disturbing feature. The schedule for the several grades is as follows per gross ton f. o. b. Birmingham district furnaces for delivery within the remainder of the first half of the year, viz.:

No. 1 foundry, \$11.50
No. 2 foundry, \$11.
No. 3 foundry, \$10.50.
No. 4 foundry, \$10.25.
Gray forge, \$10.25.
Mottled, \$10.
Standard basic, \$10.75.
Basic, \$11.

All of the plants engaged in the manufacture of cast-iron pipe are operating to capacity, but the general condition of the local market is not altogether satisfactory. A small amount of specifications for extensions and repairs were reported during the week. Havana, Cuba, and Tampa, Fla., are reported to have closed negotiations with local manufacturers for their requirements during the past week. The tonnage involved for the city of Tampa is approximately 2000 tons, but definite information regarding either of the sales and the tonnage involved in the second cannot be obtained. It is understood that the awarding of the Cuban business was in competition with a German manufacturer, and

specifications on the order will require a change in equipment by the local producer in order to fill the requirements. Bids on the contract specified pipe 16 feet in length, while the standard length of this kind of pipe in this country is 12 feet. It is announced that the local plant is now changing part of its equipment to meet the demand for pipe of this length. Following are quotations per net ton f. o. b. cars at Birmingham: Four-inch, \$22.50; six-inch and eight-inch, \$19.50; \$1 extra per ton for gas pipe; fittings, 2 3/4 cents per pound.

It is announced that the Woodward Iron Co., Woodward, Ala., has closed a contract with the Link-Belt Company to erect a new washing plant at its by-product coke ovens at Woodward. The washer is to cost approximately \$100,000, and is to be the largest in this district. It is to be of concrete and steel construction, with a capacity of 3000 tons per day. The Woodward people expect to make a considerable saving by the installation of the new washer, and the quality of the coke from the by-product ovens is to be greatly improved. At this time the company is erecting a battery of 30 ovens of the Koppers type at its plant at Woodward. The new washer is to be built within the next six months.

The Fairfield plant of the American Steel & Wire Co. is now turning out finished products for the Southern trade. Six hundred men are now employed at the plant, and practically all of the available homes for the workmen are now filled. It is understood that the total consumption of steel per month by the plant will be limited to about 10,000 tons until the demand for wire and steel products is sufficient to justify the increase.

Dealers in old materials report an aggregate of some 1000 tons of assorted grades as having been sold within the past week. This market has improved slowly since the beginning of the new year, but has not yet reached the point to be very promising to dealers. However, with the small amount of betterment as has been shown within the last three to four weeks, there has been some disposition on the part of at least one or two dealers to increase their holdings. A fair amount of machinery scrap and a small tonnage of borings and stove plate are reported as active. There has also been shown some demand for old car wheels for the past two weeks, and several of the smaller local melters of light castings figured in the trading of some of the grades. Very little steel scrap is being moved from the local yards, while the majority of the other grades are practically dead. Quotations are unchanged, and we quote as follows:

Old iron axles, small, \$15 to \$15.50.
Old steel axles, light, \$15 to \$15.50.
Old iron rails, \$12.50 to \$13.50.
No. 1 railroad wrought, \$12 to \$12.50.
No. 2 railroad wrought, \$10 to \$10.50.
No. 1 country wrought, \$9.50 to \$10.
No. 2 machinery cast, \$10.50 to \$11.
No. 1 steel scrap, \$10.50 to \$11.
Tram car wheels, \$10.50 to \$11.
Standard car wheels, \$12 to \$12.50.
Light cast and stove plate, \$9 to \$9.50.

Institute of Mining Engineers.

The American Institute of Mining Engineers, with headquarters at 29 W. 39th street, New York city, has issued a booklet explaining the purposes of the organization, which are to promote the arts and sciences connected with the economic production of the useful minerals and metals, and the welfare of those employed in these industries by means of meetings for social intercourse and the reading and discussion of professional papers, and to circulate among its members publication of the information thus obtained. The officers of the Institute are Charles F. Rand, president; Charles Kirchhoff and James F. Kemp, past presidents; Benjamin B. Thayer, first vice-president; Geo. C. Stone, treasurer; Rossiter W. Raymond, secretary emeritus, and Bradley Stoughton, secretary.

Smelting of Ores and Metals.

With the view to developing more efficient methods in the smelting of ores, the bureau began at its Pittsburgh experiment station a detailed investigation of the practicability of using the electric furnace as a substitute for or adjunct of the blast furnace, with particular reference to the treatment of low-grade ores.

One problem studied is the possibility of using crude oil as a reducing agent. The results of these experi-

ments, which were made by J. F. Cullen under the direction of D. A. Lyon, were incorporated in a report for publication. Another problem, still under investigation, is the possibility of using the electric furnace in the smelting of copper ores, especially sulphides. The experiments incidental to this investigation included work on:

1. The smelting of copper concentrates. Experiments have been made to determine to what degree loss of copper in the slag could be lessened by smelting these concentrates in an electric furnace.

2. The use of the electric furnace in the smelting of non-ferrous ores. The purposes of this investigation is to determine the feasibility of using electricity as a source of heat in smelting copper-iron sulphide ores, lean zinc and lead ores, and, in fact, all low-grade ores that are not amenable to treatment by wet methods, and especially to ascertain whether the electric furnace may be used profitably for treating ores from deposits that are so far from a smelter that transportation charges exceed the value of the metals in the ores. In some cases it may be possible to use hydro-electric power in an electric furnace, thus removing the necessity of transporting worthless gangue, and enabling the metals of the ores to be transported as matte or crude metal, providing it was not feasible to refine the metal at the smelting plant.

3. The use of the electric furnace as an aid to the ordinary blast furnace. In the study of this problem the following points have been considered:

(a) The possibility of recovering the iron in the slag as metallic iron. At present, as is well known, although the iron content of a gold, silver, copper or lead ore may be large, it goes to the dump in the slag, either as iron oxide or iron silicate.

(b) The possibility of producing ferro-silicon from the slags ordinarily obtained in smelting non-ferrous ores.

(c) The recovery of the sulphur as a by-product in the smelting of sulphide ores.

(d) The discovery, if possible, of some suitable collector or carrier other than copper and lead for the precious metals in smelting practice.

The purpose of the work has not been to show that the electric furnace should replace reverberatory or the blast furnaces, but that in some places it may be substituted for them. So far only the possibility of treating copper sulphide ores has been studied. The results of the work will be published in a bulletin. The electric furnace work for these investigations has been done by R. M. Keeney, under the direction of D. A. Lyon.

New investigations proposed for the coming year include: The electric smelting of zinc ores; the smelting of titaniferous iron ores; the production of "natural alloys"—that is, the production from complex ores of

alloys containing different metals in such proportions as to be of commercial use for structural materials, for tool-making, etc.; the use of an electric process for removing moisture from the blast supplied to blast furnaces; the removal of sulphur from producer gas for metallurgical purposes.

The following reports have been or are being prepared for publication:

"The Use of the Electric Furnace in the Manufacture of Iron and Steel," by D. A. Lyon and R. M. Keeney; "The Use of Crude Oil as a Reducing Agent in the Reduction of Iron Ores," by D. A. Lyon and J. F. Cullen; "Smelting of Fine Michigan Copper Concentrates in the Electric Furnace," by R. M. Keeney; "The Use of the Electric Furnace in Metallurgy," by D. A. Lyon, R. M. Keeney and J. F. Cullen; "The Possibility of Smelting Copper Ores in the Electric Furnace," by D. A. Lyon and R. M. Keeney.

These investigations have been carried on by D. A. Lyon, metallurgist, and J. F. Cullen, electro-metallurgist; W. A. Hueller, chemist (from October, 1912, to January, 1913); R. M. Keeney, electro-metallurgist (from February 1, 1913).

Hardware Men to Meet.

The executive committees of the Southern Hardware Jobbers' Association and of the American Hardware Manufacturers' Association have decided to have the next convention of these two organizations at White Sulphur Springs, W. Va., June 9, 10, 11 and 12. The four mornings are to be devoted to sessions of the two associations; the afternoons and the evenings to be held open for the fullest possible enjoyment of the numberless natural beauties of this charming resort and of the many entertainments which have been provided by the appropriate committees.

It is reported at the secretary's office of the American Hardware Manufacturers' Association that all the signs indicate that this approaching June meeting will be the most numerous attended as well as the most enthusiastic and valuable ever held by the two organizations.

For Cotton-Mill Machinery.

Yannopoulos Cassaris & Cie, B. P. 1220, Alexandria, Egypt, write to the MANUFACTURERS RECORD as follows:

"I have a very urgent order to obtain, at the earliest possible moment, definite estimates in as complete detail as possible for the installation of all the necessary mechanical equipment for a cotton factory on a basis of 120 looms. We take the liberty of asking you to aid us and to make suitable firms acquainted with our desires and to ask them to give the matter the attention which we think it merits."



CITY HALL, TAMPA, FLA.

To be erected for city; practically two buildings, with courtyard through center, bridged on second floor; one section to contain municipal offices and other to contain offices of police department; three stories; tower, 50 feet square, five stories high, surmounted by dome with clock 4 feet square; Doric architecture; limestone columns; granite base; cost about \$325,000; architects, Bonfoey & Elliott, Tampa; construction contracts not awarded.

GOOD ROADS

WEEK'S HIGHWAY RECORD.

Progress in Southern Road and Street Improvement.

[Further details of highway undertakings and bond issues mentioned below are given under the headings Construction Department and New Securities, published elsewhere in this issue.]

Bonds Voted.

Blountville, Tenn.—Sullivan county voted additional \$100,000 bonds for road construction.

Elgin, Tex.—City voted \$30,000 bonds to repair roads, etc.

Falfurrias, Tex.—Brooks county voted \$34,000 bonds for road construction.

Gastonia, N. C.—City authorized \$55,000 bonds for sidewalks and streets.

Mineral Wells, Tex.—Palo Pinto county, Precinct No. 1, voted \$700,000 bonds for road construction.

Shelby, N. C.—Kings Mountain precinct, Cleveland county, voted \$15,000 bonds to construct about 10 miles of road.

Waco, Tex.—City voted \$65,000 bonds for street paving.

Bonds to Be Voted.

Angleton, Tex.—Clute Road District of Brazoria county votes March 7 on \$38,000 bonds to construct road.

Belton, Tex.—Road District No. 8 of Bell county votes March 20 on \$300,000 bonds to improve roads.

Bonham, Tex.—Commissioners' Court ordered election March 24 to vote on \$300,000 bonds for road construction.

Dayton, Tenn.—Rhea county will vote March 31 on \$250,000 road bonds.

Denton, Tex.—Denton county votes February 28 on \$300,000 bonds for road construction.

Fayetteville, W. Va.—Fayette county will vote during year on \$900,000 bonds for road improvements.

Gate City, Va.—Floyd Magisterial District of Scott county votes April 21 on \$41,000 bonds for road improvement.

Miami, Fla.—City votes April 28 on issuing \$60,000 bonds for street and sidewalk improvements.

Raleigh, N. C.—City will vote on \$100,000 bonds for street improvements.

Rising Fawn, Ga.—Dade county ordered election March 25 to vote on issuing \$60,000 bonds for road construction.

Somerset, Ky.—Pulaski county votes April 17 on \$300,000 bonds for road construction.

Contracts Awarded.

Anderson, S. C.—Anderson Real Estate & Investment Co. contracted for one mile of sidewalk in connection with suburban land development.

Baltimore, Md.—State Roads Commission contracted to pave 10 miles of road.

Baltimore, Md.—State Roads Commission awarded \$82,005.02 contract to complete State road between Federalsburg and Denton.

Baltimore, Md.—City awarded \$10,644.16 paving contract.

Houston, Tex.—City awarded \$75,000 paving contract.

Johnson City, Tenn.—Trinidad Paving Co., Cleveland, O., has \$50,000 contract for street paving.

Kansas City, Mo.—County Court contracted at \$20,608 for grading roads.

Oxford, N. C.—City contracted for engineer and street improvements amounting to about \$25,000.

Star City, Ark.—Lincoln county contracted for 13 miles of road.

Contracts to Be Awarded.

Asheville, N. C.—City and Buncombe county will construct two-mile boulevard; cost \$47,000.

Benton, Tenn.—Polk county will build 110 miles of pike road at cost of \$250,000.

Bradentown, Fla.—City receives bids until March 20 for 847 square yards vitrified brick and asphaltic concrete paving; \$100,000 available.

Breaux Bridge, La.—City receives bids until March 23 to construct 12,000 square yards cement walks with curbing.

Dadeville, Ala.—Tallapoosa county will construct 28 miles of road.

Guntersville, Ala.—Marshall county receives bids until April 7 to grade and drain 33 miles of roads.

Huntington, W. Va.—Cabell county will construct roads; \$300,000 authorized.

Independence, Va.—Grayson county will construct six miles of road.

King George, Va.—King George county will build about four miles of road.

Lebanon, Va.—State Highway Commission receives bids until March 4 to construct about 10 miles of road.

Richmond, Va.—City receives bids until February 27 for street improvements estimated to cost from \$225,000 to \$250,000.

Sapulpa, Okla.—Creek county will build 40-mile road; estimated cost \$100,000.

185 Miles of Roads.

Referring to the vote, mentioned last week, of \$1,075,000 road bonds in McLennan county, Texas, Geo. N. Denton, County Judge, Waco, writes to the MANUFACTURERS RECORD as follows:

"Bond issue for road construction in the amount of \$1,075,000 was authorized by the vote in Road District No. 2, which includes Waco, the county-seat, on February 14. The assessed valuation of this road district is about \$40,000,000, and it appears to be a very attractive issue. The road to be constructed is standard bituminous bound macadam. The system proposed in this road district will comprise about 185 miles, and is the best construction that has been proposed in the State. R. J. Windrow, county engineer, who has prepared specifications, will be in charge of the construction. The Commissioners' Court will shortly offer these bonds for sale, and we hope to realize upon them within the next 60 or 90 days."

\$500,000 for Roads.

Elections are to be held in Manatee county, Florida, on March 17 and March 26 on propositions to issue an aggregate of \$500,000 of bonds to be expended upon about 100 miles of improved roads in the county and a bridge across the Manatee River between Palmetto and Bradentown. The main roads to be improved are from Sarasota to Venice, 20 miles, from Sarasota to Sandy, at the De Soto county line, 30 miles; Sarasota to Bradentown, 13 miles, and two roads northward from Palmetto, one by way of the bay shore and the other from Parish to the Hillsboro county line, about 22 miles, together with several shorter stretches.

\$1,200,000 for Road Building.

Road and bridge bonds aggregating \$1,200,000 were issued during January, according to the monthly building report compiled by the Texas Business Men's Association at Fort Worth. Compared with January, 1913, this is an increase of more than fourfold. In all, eight elections were held, and all but three of them carried unanimously. The aggregate of the three defeated issues was \$360,000.

Voted \$700,000 for Roads.

Again Texas is prominent because of a large amount of money voted for road construction. This is seen in dispatches from Mineral Wells, Tex., to the effect that Palo Pinto County Precinct No. 1 has voted \$700,000 bonds for good roads. Thus do the people of that great State continue their plans for the modern highway so conducive to agricultural and industrial development.

The purpose of the Texas Fig Co., recently organized with J. H. Powell, La Porte, Tex., president, and J. C. Carpenter, secretary, with main office at La Porte, Tex., is to encourage the planting of figs. The company will not raise figs, but will preserve them.

RAILROADS

[A complete record of all new railroad building in the South will be found in the Construction Department.]

NORTHERN CENTRAL RAILWAY.

Gross Revenues of Over \$13,500,000 Cut Down by Heavy Operating Expenses.

The income statement presented in the annual report of the Northern Central Railway Co. for the year ended December 31, 1913, shows that the revenues from railroad operation totaled \$13,563,721.66, an increase of \$719,005.59 as compared with 1912. Expenses of conducting the railroad operations were \$11,906,728.12, an increase of \$1,052,721.56, and the net revenue was \$1,566,993.54, or \$333,715.97 less than in 1912. The net railway operating revenue after considering auxiliary operations was \$1,573,551, decrease \$333,394.87; railway operating income after taxes \$1,059,357.38, decrease \$383,086.06; gross income \$2,936,935.41, increase \$6315.03; net income after deductions \$1,703,071.87, decrease \$122,361.84. There were paid out of this the usual dividends, while \$80,275.75 was appropriated to sinking and other reserve funds and \$75,336.12 was spent for additions and betterments. Total amount to credit of profit and loss December 31 was \$9,934,913.66, as compared with \$9,609,051.29 a year ago.

It is notable that the "other income" of the company, that is, income from sources besides railroad operation, amounted to considerably more than the net income from operation, or \$1,877,578.03, which is \$818,220.85 greater than what was earned net through transportation. The sources of this "other income" are varied, the chief, however, being a dividend income of more than a million dollars, while the income from rent of joint facilities was \$295,537.42 and from miscellaneous rents \$118,656.38, etc. The total of this other income increased \$389,401.69 over 1912.

Concerning the projected extensive improvements in Baltimore, the report says: "The necessity for the enlargement of freight terminals in the city of Baltimore makes it evident that this work cannot be much longer deferred without causing very serious congestion and a considerable increase in the expense of handling traffic, especially in the Calvert district, where the volume of traffic is beyond the capacity of the present tracks and station. Therefore freight yards at Monument and Constitution streets and at Alicannna street and Central avenue were improved and the real estate has been acquired and final plans are being formulated for pier extensions at Canton. The necessary real estate required for the enlargement of the Calvert street terminals was also purchased and the company has entered into negotiations with the city of Baltimore for the necessary revision of streets to materially enlarge the yard and station at that point."

There was spent for pier extensions at Canton \$111,652.87; for real estate at Canton, \$631,018.81; for the improvement to yards above referred to, \$225,167.69.

The balance-sheet shows the total assets of the company to be \$47,021,800.77, an increase of \$1,055,632.85. The road and equipment are valued in this at \$34,625,182.26 net, which is an increase of \$1,865,118.73 over last year.

\$6,000,000 DALLAS TERMINAL.

James Stewart & Co. of St. Louis Given the Contract—Work to Start Now.

The Union Terminal Co. of Dallas, Tex., has let contract to James Stewart & Co. of St. Louis, Chicago and New York for the immediate construction of the new terminal station in Dallas, which will cost, according to estimates, approximately \$6,000,000, including the surrounding terminals, facilities, yards, etc., and the site. This action was taken following the sale of \$2,000,000 of bonds to Salomon & Co., bankers, of New York. F. G. Pettibone of Galveston is president of the terminal company and Murrill L. Buckner secretary. Mr. Pettibone is vice-president and general manager of the Gulf, Colorado & Santa Fe Railway, and Mr. Buckner has his office at Dallas, in the Cotton Exchange Building. The former is quoted saying that under the contract the building will be erected, together with the train sheds, trackage will be laid, a roundhouse will be

built and a viaduct will be constructed so as to carry Commerce street over the tracks.

Plans for this important terminal have been under consideration for several years. The proposition was taken up by the various railroads interested in 1911, and after about a year and a half the terminal company was formed and began buying land for the site. Nearly \$2,000,000, it is said, has been expended for this purpose alone. The station will be immediately to the northwest of the Oak Cliff viaduct, and it will extend over land now occupied by the Arbuckle grain elevator, the old plant of the New Century Milling Co. and the old county jail, all of which will be soon removed. The jail may be last to go, as its demolition must await the completion of the new jail now under construction.

F. D. Griffin of Temple, Tex., resident engineer for the Gulf, Colorado & Santa Fe Railway, according to a report from there, has been chosen to be superintendent of construction of the new Dallas station.

\$15,000,000 FOR THE SOUTHERN.

Shops, Yards and Other Terminals to Be Improved—Large Equipment Orders.

Concerning its sale of \$10,000,000 of 5 per cent. three-year notes to J. P. Morgan & Co. of New York, the Southern Railway Co. announces through President Fairfax Harrison that they were sold "pending the improvement of the market for long-term securities," and also because the company believes "in the continued prosperity and growth of the territory it serves" and recognizes "the necessity for enlarging its facilities to keep pace with that growth."

The proceeds of the notes are to be used to complete improvements and betterments included in the general plan which was prepared when the development and general mortgage of the road was created in 1906. The particular improvements immediately in prospect are mainly additional and enlarged shops, yards and other freight terminals, which have been greatly desired and earnestly recommended to facilitate economical operation and to enlarge the opportunity of the company to secure business. These improvements will be started and completed as rapidly as possible.

Besides this program, the Southern Railway will also carry out another for the betterment of its rolling stock. It has arranged to purchase through an equipment trust much new equipment, largely of steel construction, and costing altogether more than \$5,000,000. Bids for these cars and other rolling stock are now being received, and contracts will be awarded as soon as they can be carefully considered.

"KATY'S" PLANS IN TEXAS.

Looking to Expenditure of \$6,000,000 in Six Years.

President C. E. Schaff of the Missouri, Kansas & Texas Railway, says concerning the recent announcement that the company would spend \$6,000,000 in Texas within the next six years:

"All of the details of these improvements have not as yet been worked out, and it is not likely that we will make definite plans for the entire improvement program at this time. However, arrangements are now being made for the laying of at least 100 miles of new 85-pound rail, renewing old ballast and putting new ballast under the track where it is necessary on the more important parts of the line, widening of cuts and fills, etc., which work will be undertaken during the present year. * * * The line in South Texas was seriously damaged by recent disastrous floods, and work on the restoration of that part of the line will be taken up first."

Trinity & Brazos Valley Work.

President J. W. Robins of the Trinity & Brazos Valley Railway Co., Houston, Tex., says, with reference to the recent press report that \$250,000 would be expended for improvements, that most of the expense will be in connection with ballasting the line with gravel. The company has its own gravel pit, and will do all the work with its own forces. There will also be considerable bridge work, it being intended to replace some trestle structures with concrete boxes or arches, filling over them; also to replace other trestles with creosoted wood.

This work will likewise be done by the company. No contract will be let. Track extensions are not contemplated, nor will there be any additions to side-tracks or yards.

New Equipment, Etc.

Texas & Pacific Railway has sold \$2,000,000 of bonds to Blair & Co. of New York, and E. F. Kearney, first vice-president and general manager, New Orleans, is quoted saying that orders will soon be placed for 20 locomotives, 100 steel passenger cars, 1000 gondola cars and 500 other freight cars.

Southern Railway is about to purchase over \$5,000,000 of equipment, including locomotives and cars. The order will, it is understood, cover 41 locomotives, 400 steel flat cars, 500 coal cars, 100 steel underframe stock cars, 1500 steel underframe box cars and 25 steel underframe poultry cars, besides other equipment.

Florida East Coast Railway, according to a market report, will purchase from 1000 to 2000 box cars. The road is also said to have ordered 500 box cars from the Mt. Vernon (Ill.) Car Co.

Missouri & North Arkansas Railroad, says a report, has ordered 4 freight locomotives from the Baldwin Locomotive Works, Philadelphia.

Tennessee Central has ordered 2 consolidation locomotives from the American Locomotive Co., New York.

Virginian Railway is reported to have ordered 1000 gondola cars from the Standard Steel Car Co., Pittsburgh.

Central Railway of Georgia, according to a report, has ordered 7500 tons of rails from the Tennessee Coal, Iron & Railroad Co., Birmingham.

J. L. Roper Lumber Co., Norfolk, Va.; Dill-Cramer-Truitt Corporation, Suffolk, Va., and Conway Lumber Co., Conway, S. C., have each, according to a report from Philadelphia, ordered 1 locomotive from the Baldwin Works.

Illinois Central is reported to have ordered 10,000 tons of rails from the Tennessee Coal, Iron & Railroad Co., Birmingham.

St. Louis, Iron Mountain & Southern Railroad (Missouri Pacific system) has applied to the Missouri Public Service Commission for authority to issue \$472,000 of bonds for the purchase of 25 locomotives recently ordered from Baldwin's.

Central of Georgia is reported in the market for 500 box cars.

Illinois Central, according to a market report, is getting prices on a proposed order for 50 Mikado type and 25 switching locomotives.

Pennsylvania Railroad, says a report, is asking for bids to furnish 200 cabooses.

Atlantic Coast Line has ordered 25 Pacific type locomotives from Baldwin's. The road is also reported in the market for 15 passenger train cars.

Norfolk & Western Railway has ordered 5 dining cars from the American Car & Foundry Co., St. Louis.

Morgantown & Kingwood Railroad, says a report, has ordered 200 steel hopper cars from the Pressed Steel Car Co., Pittsburgh.

New Orleans Railway & Light Co., Memphis (Tenn.) Street Railway Co. and Charlotte (N. C.) Electric Railway are all reported in the market for new equipment. The first has issued specifications for 50 cars and the next for 25 cars.

Clinchfield Extension Notes.

The Carolina, Clinchfield & Ohio Railway has sold to Blair & Co. of New York \$5,000,000 of Elkhorn extension first mortgage 5 per cent. gold notes, and they are now being offered to the public. It is stated in connection with this offering that the extension is now nearing completion from Dante to Elkhorn City, about 35 miles, which will connect up with the main line, now in operation from Dante to Spartanburg, 242 miles. It is expected to open the extension for service next summer. Connection with the Chesapeake & Ohio Railway will be made at Elkhorn City.

President Mark W. Potter reports that the earnings of the line for the six months ended December 31, 1913, were \$1,675,145 gross and \$982,468 net after deducting total expenses and taxes. After deducting from the latter the fixed charges there was a surplus of \$510,211. For the same period in the preceding fiscal year the gross was \$1,413,959, net \$835,717 and surplus \$374,939. Thus there was a substantial increase in each item.

TEXTILES

[A complete record of new textile enterprises in the South will be found in the Construction Department.]

For Rogersville Hosiery Mill.

The Rogersville (Tenn.) Knitting Mills Co., mentioned last week as incorporated, plans to construct a brick building, probably 100x60 feet in size, costing \$7000 to \$8000, and to install machinery costing about \$12,000 for a daily capacity of 200 dozen pairs of hosiery. This machinery is to include about 50 knitters driven by hydro-electric power, which the company will obtain from a Rogersville transmission system. The plant will employ about 50 operatives. Quotations on the machinery are invited. Address the company, care of H. G. Kyle.

The Cotton Movement.

In his report for February 20 Col. Henry G. Hester, secretary of the New Orleans Cotton Exchange, shows that the amount of cotton brought into sight during 173 days of the present season was 12,331,550 bales, an increase over the same period last year of 700,358 bales. The exports were 6,679,546 bales, an increase of 53,958 bales. The takings were, by Northern spinners, 1,884,084 bales, a decrease of 122,108 bales; by Southern spinners, 2,222,162 bales, an increase of 286,556 bales.

Cromer Brothers' Silk Mill.

Cromer Bros., Hagerstown, Md., have awarded contract for the construction of a 90x40-foot building to be used for offices and shipping department. They will also erect an additional story to their present 30x15-foot mill building. This firm has completed its 40x39-foot mill addition previously announced, and is now installing the necessary machinery to equip that structure. Its investment for the building and machinery just completed is about \$15,000.

A \$125,000 Knitting Company.

The Vandois Knitting Mills, Morganton, N. C., has been incorporated with an authorized capital stock of \$125,000 by W. C. Erwin, A. M. Kistler and Moore & Sigmon. Mr. Erwin was recently mentioned as interested in a plan to organize a knitting-mill company.

Textile Notes.

R. P. Paulsen, Webb City, Mo., is reported as planning the establishment of a knitting mill.

Salisbury (N. C.) Industrial Club plans the organization of a company to establish a knitting mill.

The Swift Spinning Mills, Columbus, Ga., contemplates doubling output. This company has 14,136 ring spindles, 2240 twister spindles, etc., driven by electric power.

The Deibert Manufacturing Co., Elk Mills, Md., will establish a textile mill at Elkton, Md. It will occupy a two-story brick building to be erected by the Elkton Improvement Co.

Goodenow-Brookfield Knitting Co., Kansas City, has doubled its capacity in connection with recently-mentioned increase of capital stock from \$35,000 to \$100,000. Men's underwear and knitted sweater coats are manufactured by the company.

The Rome (Ga.) Hosiery Mills, having completed constructing its two-story 120x64-foot additional building previously reported, will install the additional machinery heretofore announced. This new equipment will include 100 knitting machines, 2 dyeing machines, etc.

The Manchester (Ga.) Cotton Mills has completed constructing its two-story additional building costing \$12,000, and is now installing 3192 new spindles, with accompanying machinery. This is in accordance with previous announcements, and the enlargement will add materially to the company's output.

MECHANICAL

Illustrations and descriptions having news value pertaining to developments in machinery, mechanical devices and inventions will be considered for use in this department.

New Reinforced Concrete Bridge Near Easton, Maryland.

To replace the timber pile trestle highway bridge, 1075 feet long and 16 feet wide, which has been renewed a number of times during its existence of 60 years, over the Miles River near Easton, Md., the reinforced con-

crete bridge shown in the illustration has recently been constructed. The Miles River is an estuary of the Chesapeake Bay on the Eastern Shore of Maryland.

The new bridge was built under the co-operation of the State Roads Commission of Maryland and Talbot county authorities. On account of the expense of frequent renewals of the piling of the old bridge, it was decided to provide a permanent structure of concrete with a Scherzer steel bascule bridge at the channel.

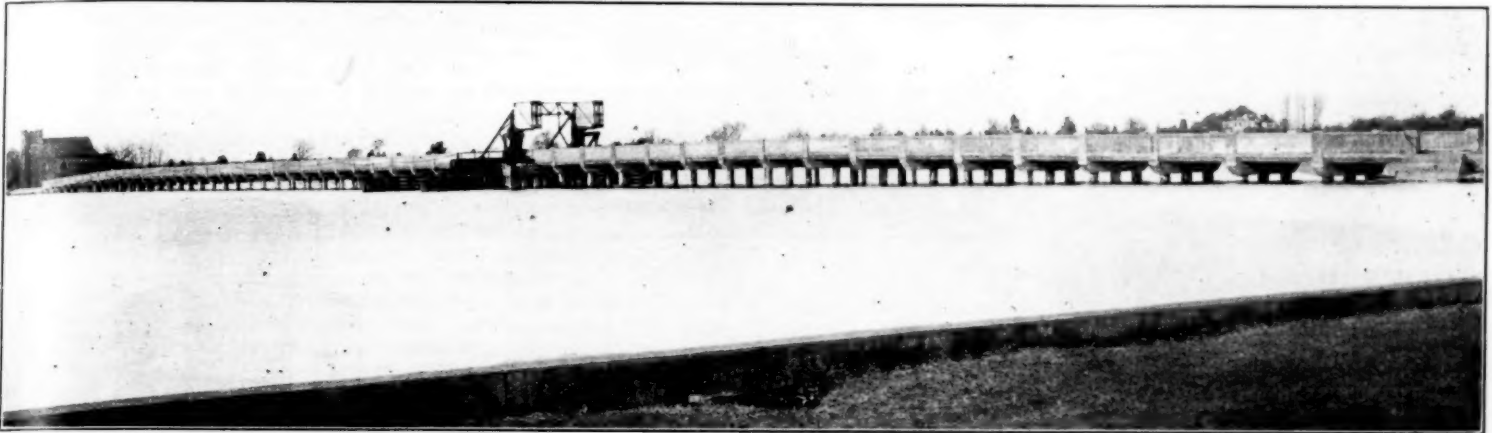
The construction consists of reinforced girders, floor and railing slabs. The channel is 15 feet deep at the draw span, and the Scherzer bascule draw is 40 feet in length. As a matter of economy and convenience, a number of the parts, including the piles, floor and railing slabs, were cast in Baltimore. The bridge was designed and built by the Raymond Concrete Pile Co., 140 Cedar street, New York, and Munsey Building, Baltimore, and the Scherzer rolling lift draw span was designed and built by the Scherzer Rolling Lift Bridge Co., Monadnock Block, Chicago. It is so balanced by the counterweights shown that one man can raise or lower it.

The method of precasting the members was adopted on account of the advantage of obtaining labor facilities in Baltimore, difficulty of landing material and making the piles and slabs on the banks of the river, and the fact that the cost of transporting the finished materials and delivering them at the point at which they were to be used, would not be greater than the cost of transporting the bulk material, and the necessity of constructing a temporary wharf for unloading the materials was eliminated. After the piles and floor slabs were in place it was practicable to cast the reinforced concrete caps or floor beams, the posts between adjacent railing slabs and the abutments for the bridge, and the mass concrete piers for the draw span without having a working plant on shore. Concrete for these parts was mixed on a barge equipped with mixing plant, and the parts that required handling were placed with a 15-ton derrick scow. The three concrete piles in each trestle bent are 18 inches square, ranging in length from 38 to 54 feet, reinforced with rods at the four corners. They were jettied to initial bearing and finally driven to required depth by 6000-pound drop hammer, the heaviest of the piles weighing 12 tons. In leveling off the top ends the concrete was removed by explosives, and the steel sawed off with a hacksaw, so that the piles were brought to their proper alignment. Placing the forms of the floor girders then permitted the concrete to be poured for those members. The floor beams are 30 inches deep, and reinforced to meet ordinary highway loading. The floor slabs are 19 feet 3 inches long and 18 inches deep, also reinforced. They were cast in four

separate pieces to facilitate casting and handling. Expansion joints were placed at intervals of 100 feet.

The materials used in the construction of the bridge include about 5000 barrels of Security cement, supplied by the Security Cement & Lime Co., Hagerstown, Md.; about 250 tons of Havemeyer bars, supplied by the Concrete-Steel Co., 29 Broadway, New York, through Jamieson, McKenzie & Evans of Baltimore. A covering about one-half inch in thickness was laid over the entire road bed, forming a carpet for the concrete foundation. This was composed of Tarvia binder, with fine gravel. The Tarvia was obtained from the Barrett Manufacturing Co., 17 Battery Place, New York. Contract price for the concrete structure, with paving, was \$52,450, and that for the Scherzer rolling lift bridge \$5990.

The broken rock and waste is handled by a steam derrick and cars (hand trammed) until the quarry face is advanced and more yard room gained, when it is the intention to employ steam shovels and mechanical haulage, in order that the plant may be worked to capacity. Flush with the level of the quarry is the hopper of



NEW REINFORCED CONCRETE BRIDGE NEAR EASTON, MD., WITH SCHERZER ROLLING LIFT DRAW BRIDGE.

QUARRYING BY ELECTRICITY.

Plant of a Stone Company at Spencer Mountain Near Charlotte.

[Special Correspondence Manufacturers Record.]

Candor, N. C., February 20.

Spencer Mountain is 20 miles west of Charlotte, and its summit is approximately 500 feet above the surrounding plain. It is made up largely, although not

entirely, of hard granular quartzite that is tilted up on edge, and while the rock revealed to view at the present time is not the best that the mountain mass contains, it should well meet the requirements for ballast, concrete and other construction purposes. A quarry has



LOADING BINS AT PLANT OF SPENCER MOUNTAIN STONE & BRICK CO.

each 16 feet long by 41 inches in diameter. These deliver four grades of product, namely, two-inch, one inch and a half, three-quarter inch, three-eighths or under, and each size falls into its particular pocket in a bin immediately below over the railroad track.



ROCK CRUSHER AND SCREEN AT PLANT OF SPENCER MOUNTAIN STONE & BRICK CO.

recently been opened and a large crusher plant installed by the Spencer Mountain Stone & Brick Co. The plant is thoroughly modern, driven by electricity and the product is also hauled away by electric locomotives over a spur track 1.9 miles in length extending from the

Individual drive for the mechanism is used as far as possible; a motor of 100 horse-power serves the No. 10 crusher and its screen, two of 40 horse-power each drive the No. 5, with a fourth of 30 horse-power for the belt conveyor and sizing screens. Electric current is fur-

nished by the Southern Power Co., which is the premier power producer of this part of the country. The crushing plant was designed by the Allis-Chalmers Company and erected under the supervision of Frank S. Tucker, M.E., of Charlotte. Charlotte and the surrounding country will be supplied by this installation. A number of quarries have been opened to meet the demands for crushed stone, but the quantity of good material has evidently not been superabundant. Road material has been obtained by gathering loose boulders from the field, and washed gravel from a dredge built on the Catawba for recovering gold from the river bed, as well as waste from a gold mine near Charlotte, have been sources of supply.

CLAUD HAFER.

Troy Trailer for Army Escort Service.

As a result of extensive investigations by United States Army authorities with motor trucks and tractors to determine how the cost of hauling in escort service might be reduced, some purchases of such equipment have been made. The army authorities at Galveston, Tex., have recently been furnished with a Troy trailer,



TROY TRAILER FOR ARMY USE AT GALVESTON.

herewith illustrated, for use in escort service in that city and vicinity. Preliminary tests are being made with it, and the Troy Wagon Works Co., Troy, O., maker of these trailers, expects that its trailers may be extensively adopted after the tests are completed.

A Troy trailer owned by W. E. Edgar & Sons of Detroit, Mich., carries 4½ tons of roll paper at one load handled by motor truck, and it is stated that a great saving has resulted as compared with hauling by motor truck alone.

Short-Circuited Test of Electric Generator.

In the presence of a number of representatives of central stations, the engineers of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., recently short-circuited a 16,700 K. V. A., 8800-volt generator, running at full speed and without resistance or other protection in the circuit. Oscillogram records showed that a current of 21,000 amperes, or 12½ times normal, flowed through the generator. With generators designed some years ago such a test would no doubt have wrecked the machine, but in the present instance no damage was done. The only visible effect was a static flash between the field and the armature.

The test was performed to demonstrate that generators are being built that require no outside protection from outside short circuits, the generator itself being so designed as to be self-protecting. Unless the generator is properly constructed a complete short circuit tears out the armature coils, which, coming into contact with the revolving field, causes extensive wreckage. Furthermore, the static flash, which always occurs under such circumstances, will destroy inferior insulation. With generators of the type tested, both results are guarded against by firmly securing the armature coils and bracing their ends, and by the use of mica insulation. In consequence even so severe an ordeal as this test was withstood without harm, although it is stated that it has been repeated many times with the same machine.

In connection with this test several others were carried out in order to prove the reliability of circuit-breakers and reactance coils for protecting the feeder circuits. The generator was repeatedly short-circuited through these devices, which are reported to have stood up well under the enormous stresses to which they were subjected.

The practice recommended by the Westinghouse engineers is to protect the feeders. If the generators are protected and a short circuit occurs on any of the feeders, the voltage will fall on the feeders, synchronous

motors will be thrown out of step, and an overwhelming overload will be thrown on the circuit-breaker of the short-circuited feeder, since it will carry the total current of all the generators in the station. If, however, protective reactances are placed in each feeder circuit, and a short circuit in a feed occurs, only that feeder will be affected, and even then its reactance coil will prevent the current in it from rising to too high a value. The voltage will be maintained at the bus bars and no disturbances will be felt in the remaining feeders. This happens, provided that the generators are self-protective; if not, such an event may seriously injure them. It is possible to protect non-self-protecting generators by reactances, but as the test described above shows, generators can be supplied that are immune to the worst conditions of load that can be imposed upon them.

Lennox Serpentine Shear.

The new type of cutting machine placed on the market by Joseph T. Ryerson & Son, 2558 W. 16th street, Chicago, and 30 Church street, New York, designed particularly for the straight, irregular or curved cutting of sheets and plates, is known as the Lennox Serpentine Shear. The frame is a steel casting of spiral construction, designed to provide sufficient clearance for material of any length or width. It will effect not only straight cutting, but also in or out curves having a minimum radius only slightly larger than the diameter of the tool blades. The spiral steel frame carries the gearing, and is mounted on a cast-iron base. The shear is shown in the accompanying illustration.

The gears have teeth cut from solid metal, and are provided with cast-iron gear guards to protect the workman. The blades, which are made of high-grade tool steel, are set in approximately a horizontal plane. This gives a large cutter bearing on the sheet or plate, and consequently there is very little distortion in the cutting. The upper cutter is positively driven, while the lower cutter is mounted in an adjustable sleeve, so that its position may be varied to allow for different thicknesses of material and for redressing. In addition to this, a cam is provided so that the lower blade can be dropped enough to permit the removal of sheets without



LENNOX SERPENTINE SHEAR.

reversing the machine. The cutters have a flush fastening to the shaft, so that no nut projects to interfere with the handling of the work and the knurled edges feed the sheet automatically into the machine. A tool steel pin is provided to take up the end thrust on the lower cutter shaft. Where a number of sheets are to be cut to the same pattern, a template may be bolted

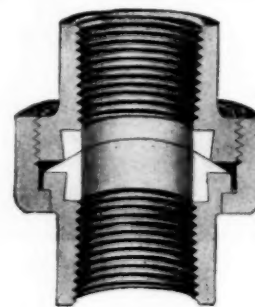
to the work, and this template followed by guiding against the top cutter.

The machine is driven by means of a two-speed pulley, giving slow speed for intricate curve cutting and high speed for straight work. The main drive shaft is extended and squared on one end, so that a hand crank may be used if power is not available. The shear shown in the illustration has a capacity for cutting No. 10 gauge material and lighter, while other sizes having capacities of No. 16 gauge, one-quarter inch and three-eighths inch material can be furnished. They are arranged for either belt and hand power or direct motor drive.

Rockwood Pressed Steel Union.

The accompanying illustration of the pressed steel union having bronze seats, which has recently been placed on the market after being extensively used for some years by its designer and manufacturer, shows the union as developed and made by the Rockwood Sprinkler Co., Worcester, Mass.

The union, although formed in a press from sheets of steel, is described as having the same cross-section



ROCKWOOD PRESSED STEEL UNION.

as it would if made of malleable iron cast in a foundry. Much in the way of costly experiment has been done by the manufacturer and the inventor of the punching processes involved. The result is a union having the well-known features of the malleable iron union, with the additional advantages of being made of steel with punches and dies, so that it is without sand holes or seams; the bronze rings forming the seats are not pushed into place, but are spread into cavities under great pressure, with the result that the steel and the bronze are practically welded together, and, once having been put together, cannot be separated. This is found to be of importance in assuring the tightness of the unions; and although the bronze faces of the union are formed in place under the enormous pressure of several hundred tons, they are subsequently ground together as a ball joint in a specially designed and patented grinding machine adapted to the purpose.

These features, it is stated, enable the manufacturer to guarantee the tightness of these unions under fluid pressures up to 1000 pounds to the square inch.

While every union is carefully sheradized after threading to protect it from rust, there are places where even a sheradized union will show signs of oxidation after being in position for several years. The nut of the Rockwood union is specially made to facilitate taking the union apart where the threads have become cemented together. To effect this, six grooves are provided across the threads, into which kerosene or gasoline may be placed and quick access be had by the fluid to the entire surface of the threads. This is a valuable feature where it is desired at any time to quickly separate the pipe without destroying it. The coefficient of expansion and contraction of the joint is the same as adjoining pipes, so that leaks will not develop from expansion or contraction in the system.

Special Farm Train.

The Cotton Belt "Better Farming Special," which was operated in Texas during the month of January, proved a success from start to finish. This train was on the road 30 days, visited 101 stations and was attended by over 35,000 people. The train is now being refitted and gotten ready for the trip through Arkansas, Louisiana and Southeast Missouri during March. The schedule for this part of the trip has just been approved, and provides for meetings at 90 stations, beginning at Texarkana March 2 and ending at Bell City, Mo., on March 28.

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